



DE GARENGEOT'S HERNIA – FEMORAL HERNIA WITH INCARCERATED APPENDIX

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ABSTRACT

Femoral hernias occur in about 3% of all abdominal wall hernias. Herniation of the appendix through a femoral hernia (called de Garengeot hernia) is even much rare a finding, occurring in 0.5% to 5% of all femoral hernias. Rene De Garengeot, a French surgeon, was the first to describe the presence of the appendix inside a femoral hernia sac in 1731. Less than 100 cases have been reported in literature till date. It may present as a tender and/or erythematous groin swelling and is often misdiagnosed as an incarcerated or strangulated femoral hernia. Being a rare condition, it poses a significant diagnostic challenge pre-operatively. The diagnosis is almost always confirmed intra-operatively due to the similarities it shares with an irreducible inguinal or femoral hernia that requires emergent surgical intervention. A high index of clinical suspicion is necessary as these hernias are at particularly high risk of perforation and so prompt surgical management is paramount.

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INTRODUCTION

Femoral hernia is a projection of the peritoneal sac through the femoral canal, below the inguinal ligament and presents with incarceration in about 50% of cases^[1]. This hernia has higher risk of incarceration and strangulation (5–20%) because of its narrow and rigid ring^[2]. The migration of the appendix into the hernia sac in an inguinal hernia is a rare event (Amyand hernia) and even rarer in incarcerated femoral hernias, which are called De Garengeot hernia^[3].

Rene Jacques Croissant De Garengeot, a French surgeon, was the first to describe the presence of the appendix inside a incarcerated femoral hernia in 1731. But only in 1785, Hevin performed the first appendectomy in an incarcerated femoral hernia^[4]. Abnormal implantation of the appendix in the cecum, leading to a pelvic appendix, or a large cecum with increased mobility extending into the pelvis can allow herniation of the appendix in the femoral hernia^[4,5]. Less than 100 cases have been reported in literature till date. Its incidence varies between 0.5 and 5% of all femoral hernias^[5]. There is a female predisposition (13:1, 93% in women), probably in keeping with the increased incidence of femoral hernia in women^[6]. In 1969, Wakeley, in a series of 655 cases of femoral hernias operated, reported an incidence of 1% herniated Garengeot^[7], and Ryan, in 1937 reported 11 cases of acute appendicitis in the femoral hernia sac, from a total of 8692 appendectomies (0.13%)^[8]. According to a case report by Ahmad *et al* in 2014, there have been only 13

reported cases in published peer-reviewed literature with preoperative computed tomography (CT) imaging^[9]. Nine of these cases were included in one comprehensive review by Kalles^[10].

We present a case report of De Garengeot's hernia, with concurrent appendicitis and briefly discuss the presentation, pathogenesis, diagnosis and surgical considerations when faced with this rare clinical entity.

Case Report

A 38-year-old female presented with two distinct swellings, a painful swelling in the right side of groin since 5 days associated with fever since 2 days and an asymptomatic swelling on the right side of anterior abdominal wall since 2 years. She gave a history of tubectomy about 5 years back, the scar of the same could be appreciated. On physical examination, there was a fixed, round, tender mass about 3 × 2 cm in size in the right groin, above the inguinal crease and another swelling of size 8 x 6 cms in the anterior abdominal wall consistent with a lipoma. She was a febrile and did not appear to be in distress. She did not have any bowel obstruction revealed by clinical examination and on the abdominal X-ray. Her laboratory findings were within normal limits except leukocytosis with TLC = 13,200 cells/cumm with 84% neutrophils. A provisional diagnosis of inflamed Inguinal Lymphnode with anterior abdominal wall Lipoma was made. The swellings were diagnosed as a necrotic inguinal lymphadenopathy with anterior abdominal wall lipoma on

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ultrasonography. She underwent contrast enhanced CT Abdomen which was suggestive of Femoral hernia with doubtful omentum as its content and anterior abdominal wall lipoma. She underwent surgical exploration, which revealed a femoral hernial sac containing incarcerated appendix (Figure-1) with anterior abdominal wall lipoma. Femoral hernia was managed by open appendectomy (Figure-2) and herniorrhaphy via an inguinal incision while the anterior abdominal wall lipoma was excised via a separate midline incision. Patient had no post-operative complications and was discharged after suture removal in stable condition.

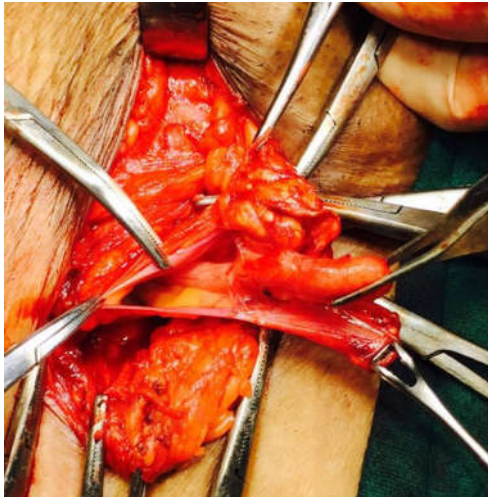


Figure1 Femoral Hernia Sac with Incarcerated Appendix

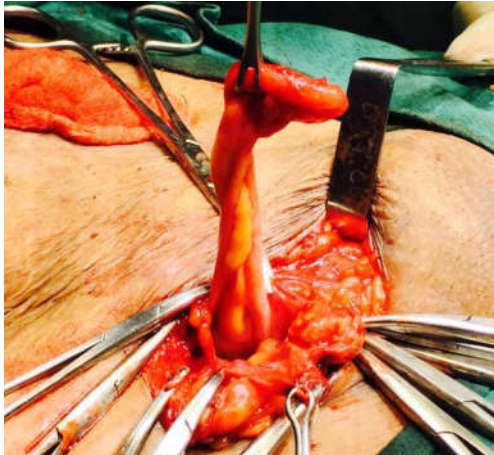


Figure 2 Vermiform Appendix prior to Appendectomy and Femoral Herniorrhaphy.



Figure 3 Post-Operative Scar

DISCUSSION

The presence of the appendix within a femoral hernia sac is uncommon and is generally found only during surgery. The preoperative diagnosis is difficult, and most patients end up being taken to the operating room with the diagnosis of incarcerated hernia. There is a predisposition for females (1:13 women), probably following the higher frequency of femoral hernia in postmenopausal women^[10,11]. The high prevalence among women has been attributed to body changes during pregnancy and other risk factors, including increased intra-abdominal pressure, smoking, advanced age and collagen defects^[10]. It occurs most frequently on the right side^[10].

This entity clinically presents as an incarcerated hernia, with irreducible groin bulge, usually painful and associated with inflammatory signs^[12,13]. Patients may present with fever, signs and symptoms of intestinal obstruction^[13]. Computerized tomography can help defining the preoperative diagnosis and surgical planning as well, but it does not change the surgical approach that is indicated to cases of incarcerated hernia. Typical findings include intramural density inside an incarcerated hernia sac (demonstrating intestinal involvement) with mild associated distention of the small intestine and, in some cases, it is possible to visualize the tubuliform structure surrounded by fat and projected just below the cecum into the hernia sac^[11,13].

Treatment is emergency surgery. Several surgical tactics were used previously and considered acceptable, such as appendectomy followed by hernia correction in a second time, laparotomy for appendectomy and hernia correction by inguinitomy or even appendectomy through the hernia sac itself with correction of femoral hernia at the same surgical time^[14]. In this case, we performed the appendectomy using the inguinitomy incision followed by anatomical repair of the femoral canal. The canal was narrowed by suturing the Cooper's ligament to the iliopubic tract. The Floor of the inguinal CANAL was reinforced by suturing the Conjoint tendon with the upturned part of inguinal ligament.

Following recommendations can be considered for the herniorrhaphy. Transversalis fascia and the aponeurotic margin of the transverse abdominis muscle may be approximated from the spine of the pubis repaired along the Cooper's ligament. Several sutures are taken in the Cooper's ligament and the lacunar ligament on the inferior edge of the Poupart's ligament in order to close the femoral canal, preventing injury to the iliac vessels. The repair then proceeds laterally as in McVay manner with interrupted sutures approximating the conjoint tendon to shelving edge of the inguinal ligament. Propylene No.1 are best suited for this repair.

The appendectomy through the hernia sac in a single surgical procedure is an accepted approach but laparoscopy remains controversial^[12]. A combined approach in which appendectomy was done laparoscopically and the hernia correction by open surgery was recently described for the first time. In that case the diagnosis of De Garengeot hernia was determined preoperatively and the patient underwent open surgery via inguinitomy, however dissection of the appendix base presented technical difficulties and the surgeon opted for laparoscopy to solve that problem^[15].

Regarding the use of polypropylene mesh there is consensus that if there is no abscess or appendix perforation it is possible to use it without increasing chances of infection or hernia recurrence^[10]. Wound complications were specially related to older patients with delayed diagnosis and treatment^[2]. Reported infection rates reach 29% while severe complications such as necrotizing fasciitis and death were rarely described^[4].

CONCLUSION

De Garengeot hernia is a rare entity that requires early surgical intervention in order to avoid complications. When facing a patient with incarcerated hernia, emergency surgery is indicated. This case reports a woman with incarcerated hernia and anterior abdominal wall lipoma, diagnosed with De Garengeot hernia intraoperatively and subjected to open inguinal herniorraphy and appendectomy through inguinal approach with excision of the anterior abdominal wall lipoma in the same surgical procedure.

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